

Customer No.: 31561
Application No.: 10/709,055
Docket No.: 12404-US-PA

REMARKS

Present Status of the Application

Claim 1 is objected to because appropriate correction for "saidamorphous" is required. The Office Action rejected all presently-pending claims 1-17. Specifically, the Office Action rejected claims 1-5 and 12 under 35 U.S.C. 102(b), as being anticipated by Yamazaki et al. (U.S. 2002/0004292). The Office Action also rejected claims 6-11 and 13-17 under 35 U.S.C. 103(a) as being unpatentable over Yamazaki in view of Jung (U.S. 6,825,493).

Applicants have amended "saidamorphous" to "said amorphous" in claim 1. After entry of the foregoing amendments, claims 1-17 remain pending in the present application, and reconsideration of those claims is respectfully requested.

Claim rejections - 35 USC 102

Applicants respectfully traverse the 102(b) rejection of claims 1-5 and 12 because Yamazaki et al. (U.S. 2002/0004292) does not teach every element recited in these claims.

In order to properly anticipate Applicants' claimed invention under 35 U.S.C 102, each and every element of claim in issue must be found, "either expressly or inherently described, in a single prior art reference". "The identical invention must be shown in as complete details as is contained in the claim. Richardson v. Suzuki Motor Co., 868 F. 2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989)." The elements must be arranged as required by the claim, but this

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is not an ipsissimis verbis test, i.e., identity of terminology is not required. In re Bond, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990). See M.P.E.P. 2131, 8th ed., 2001.

The present invention is in general related an apparatus for laser annealing an amorphous silicon film as claim 1 recites:

Claim 1. An apparatus for laser annealing an amorphous silicon film, said amorphous silicon film including a first region and a second region not overlapped with said first region, said apparatus comprising:

- a laser beam source module providing a laser beam;
- a beam splitter, disposed on a path of said laser beam, splitting said laser beam into a first laser beam and a second laser beam;

- a first photomask disposed on an optical path of said first laser beam and in front of said amorphous silicon film;* and

- a second photomask disposed an optical path of said second laser beam and in front of said amorphous silicon film;*

- wherein said first laser beam is emitted to said first region, and *said second laser beam is emitted to said amorphous silicon film in said second region after said amorphous silicon film in said first region is recrystallized.*

Yamazaki fails to disclose, teach or suggest the feature of *a first photomask* disposed on an optical path of the first laser beam and in front of the amorphous silicon film and *a second photomask* disposed an optical path of the second laser beam and in front of the amorphous silicon film. In Yamazaki's reference, in the apparatus shown in Fig. 3, 5 or 6, the primary laser light and second laser light emit to the front of the amorphous layer and the back of the amorphous layer through several optical elements, such as lens array, reflectors and lens. But, the primary laser light and second laser light does not pass through any photomask. In other words, the first and second photomasks are not found in the apparatus disclosed by Yamazaki. Therefore, Yamazaki fails to teach or suggest each and every element of claim 1.

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In addition, in claim 1 of the present application, *both the first and second laser beam emit to the front of the amorphous layer* because the first and second photomasks are disposed in front of the amorphous silicon film. However, the primary laser light and the second laser light disclosed by Yamazaki respectively emit to the front of the amorphous layer and the back of the amorphous layer. The arrangement of the elements in Yamazaki's reference is different from that of claim 1.

Moreover, Yamazaki also fails to teach or suggest that the second laser beam is emitted to the amorphous silicon film in the second region *after the amorphous silicon film in the first region is recrystallized*. Yamazaki just discloses the primary laser light and the second laser light respectively emit to the front of the amorphous layer and the back of the amorphous layer, but Yamazaki does not teach the primary laser light and the second laser light emit to the amorphous at different time, Yamazaki also fails to teach that the second laser light emits to the amorphous layer after a portion of the amorphous layer is recrystallized by the primary laser light.

For at least the foregoing reasons, Applicants respectfully submit that independent claim 1 patently defines over the prior art reference, and should be allowed. For at least the same reasons, dependent claims 2-5 and 12 patently define over the prior art as a matter of law, for at least the reason that these dependent claims contain all features of their independent claim.

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Claim rejections - 35 USC 103

The Office Action rejected claims 6-11 and 13-17 under 35 U.S.C. 103(a), as being unpatentable over Yamazaki et al. (U.S. 2002/0004292) in view of Jung (U.S. 6,825,493). Applicant respectfully traverses the rejections for at least the reasons set forth below.

A patent claim is obvious, and thus invalid, when the differences between the claimed invention and the prior art "are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art." 35 U.S.C. § 103; see also *Graham v. John Deere Co.*, 383 U.S. 1, 14, 86 S. Ct. 684, 15 L. Ed. 2d 545 (1966); *In re Dembiczak*, 175 F.3d 994, 998 (Fed. Cir. 1999). While obviousness is ultimately a legal determination, it is based on several underlying issues of fact, namely: (1) the scope and content of the prior art; (2) the level of skill of a person of ordinary skill in the art; (3) the differences between the claimed invention and the teachings of the prior art; and (4) the extent of any objective indicia of non-obviousness. See *Graham*, 383 U.S. at 17-18. When obviousness is based on the teachings of multiple prior art references, the movant must also establish some "suggestion, teaching, or motivation" that would have led a person of ordinary skill in the art to combine the relevant prior art teachings in the manner claimed. See *Tec Air, Inc. v. Denso Mfg. Mich. Inc.*, 192 F.3d 1353, 1359-60 (Fed. Cir. 1999); *Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc.*, 75 F.3d 1568, 1572 (Fed. Cir. 1996). The nonmovant may rebut a prima facie showing of obviousness with evidence refuting the movant's case or with other objective

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evidence of nonobviousness. See *WMS Gaming, Inc. v. Int'l Game Tech.*, 184 F.3d 1339, 1359 (Fed. Cir. 1999).

Applicants submit that, as disclosed above, Yamazaki fails to teach or suggest each and every element of claim 1 from which claims 6-11 depend. June also fails to teach the feature of that a first and second photomasks are disposed in front of the amorphous silicon film, and the second laser beam is emitted to the amorphous silicon film in the second region after the amorphous silicon film in the first region is recrystallized. These two prior art references do not establish any suggestion, teaching, or motivation that would have led a person of ordinary skill in the art to combine the relevant prior art teachings in the manner claimed. Therefore, independent claim 1 is non-obviousness over Yamazaki and Jung and should be allowed. For at the least the same reasons, its dependent claims 6-11 are also patentable.

In addition, the present application also provides a method for annealing an amorphous silicon film as claim 13 recites.

13. A method for annealing an amorphous silicon film, said amorphous silicon film including a first region and a second region not overlapped with said first region, said method comprising:

splitting a laser beam into a first laser beam and a second laser beam;
emitting said first laser beam to said first region of said amorphous silicon film; and
emitting said second laser beam to said second region of said amorphous silicon film, after said amorphous silicon film in said first region is recrystallized.

Yamazaki fails to teach or disclose the feature of *emitting the second laser beam* to the second region of the amorphous silicon film, *after the amorphous silicon film in the first region is recrystallized*. As discussed as above, Yamazaki just discloses the primary laser light and the

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second laser light respectively emit to the front of the amorphous layer and the back of the amorphous layer, but Yamazaki does not teach or suggest the primary laser light and the second laser light emit to the amorphous at different time. Yamazaki also fails to teach that the second laser light emits to the amorphous layer after the amorphous layer is recrystallized by the primary laser light.

Moreover, Jung just teaches using a photomask in the silicon crystallization process. But Jung does not teach emitting the second laser beam to the second region of the amorphous silicon film, after the amorphous silicon film in the first region is recrystallized. Therefore, the two references combined do not teach or suggest each and every element in claim 13. Thus, a prima facie case of obviousness for claim 13 has not been established by the Office Action. Furthermore, these two prior art references do not establish any suggestion, teaching, or motivation that would have led a person of ordinary skill in the art to combine the relevant prior art teachings in the manner claimed.

For at least the foregoing reasons, Applicants respectfully submit that independent claim 13 patently defines over the prior art references, and should be allowed. For at least the same reasons, dependent claims 14-17 patently define over the prior art as well.

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CONCLUSION

For at least the foregoing reasons, it is believed that the pending claims are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

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Respectfully submitted,

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